

# FPH Part A Examination

**June 2014**

## **Key Points and Examiners' Comments**

Please note these are key points and not model answers. Comments from the Chair of Examiners' are included indicating general points to support candidates preparing for future sittings. Please note that comments from feedback on the current sitting may also be included in the chair's comments. Sections of the syllabus being tested are included and cover the **main** part of the syllabus being tested.

Candidates are encouraged to review the FAQ (section 12 on -preparing for the Part A examination) and also the Part A syllabus. Both are on FPH website.

[http://www.fph.org.uk/frequently\\_asked\\_questions\\_about\\_the\\_part\\_a\\_exam](http://www.fph.org.uk/frequently_asked_questions_about_the_part_a_exam)

<http://www.fph.org.uk/uploads/Sept%202013%20Part%20A%20Syllabus.pdf>

Summary statistics for the sitting are included on the FPH website.

**Research methods**

**Question 1**

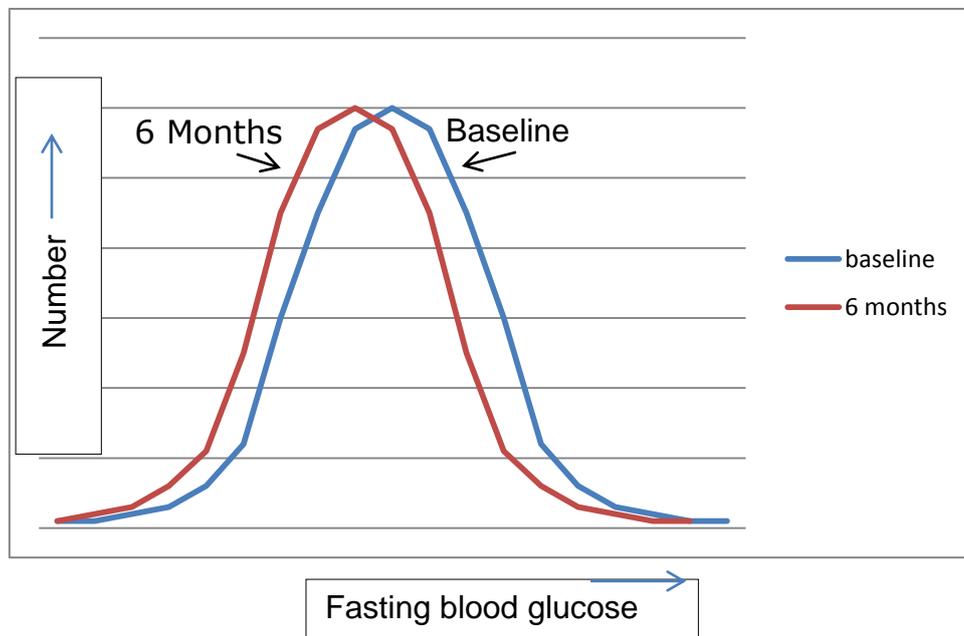
a) Explain the terms 'variance' and 'standard error', and the difference between them. (40% of marks)

The following table and figure show an extract of data and their distribution from a study of a new intervention to control blood glucose. Fasting blood glucose was measured at baseline and repeated after 6 months.

**Table**

Person identification number	Fasting blood glucose baseline	Fasting blood glucose follow-up at 6 months
1	7.8	7.6
2	8.2	8.4
3	6.9	6.3
4	8.5	7.1
5	9.5	8.4
6	10.1	8.1
...	...	...
<i>Table continues</i>	...	...
...	...	...
300	6.9	6.1

**Figure**



b) What measures should you use to summarise the distribution of these data? Justify your choice of measures. (20% of marks)

c) What statistical test would enable you to assess if there was a difference in fasting blood glucose between baseline and follow-up? Justify your choice (note that a calculation is not necessary). (40% of marks)

### KEY POINTS

*Most or all of the following would be required for a pass*

a. **Variance** is the extent of variation between participants or among repeated measurements on the same participant. A large variance implies that any central measure such as the arithmetic mean, is not a good representation of the range of values observed. Mathematically, the variance equals the square of the standard deviation. Definition from Last's dictionary of epidemiology: 'variance is a measure of the variation shown by a set of observations, defined by the sum of the squares of deviation from the mean, divided by the number of degrees of freedom in the set of observations'

**Standard Error** describes the variability of the sample mean about the true or population mean. It is the standard deviation of the distribution of sample means from a range of different populations or from repeated measures on the same population. The SE is a measure of precision. With normally distributed values and/or large samples, 1.96 SEs around the sample mean produce a range of values which will include the true mean with 95% probability.

Definition from Last's dictionary of epidemiology: 'standard error is the standard deviation of an estimate, used to calculate confidence intervals'.

b. The arithmetic mean and standard deviation. These measures are used because data are normally distributed.

c. Paired t-test because data are normally distributed and individuals have been sampled twice. Paired t-test is a test of statistical significance, used when comparing the change in values of a variable such as fasting blood glucose in a number (n) of participants over two occasions. Used when measurements are continuous and changes in the same participant are being examined.

*The following are additional points which might improve the answer to "good" or "excellent":*

The following are additional points which might improve the answer to "good" or "excellent":

- Include correct mathematical formula with text description
- Directly answering the question set in a succinct manner with no extraneous points.
- Including reference to the null hypothesis: that there was no true difference in the mean at baseline and at follow-up.

**Examiners' comments**

Excellent answers were produced where candidates were able to sufficiently explain the answers with justification. The good/excellent candidates knew details, formulae and the principles behind the answers.

Poor answers were produced where candidates did not know the basic principles, struggled to define variance or did not realise the implications of paired data. Other candidates wrote everything they know about the subject but did not answer the questions. There were generic definitions for statistical tests. Candidates wrote about all possible answers with no conclusion. Some candidates got the terms/formula confused. Some candidates were using the wrong test e.g. Chi squared / McNemar / z-test and not recognising paired data.

**Chair's comments**

Candidates are advised to look closely at the marking scheme and allocate time according to the distribution of marks. Candidates are advised to prepare for questions in this section of the paper with thorough knowledge of statistics and epidemiology including being able to describe rationale and basis for statistical techniques.

**Section of syllabus being assessed:** 1b Statistical methods including distributions.

## Question 2

- a) A local clinical consultant colleague with a special interest in sarcoidosis (incidence 20 per 100,000) approaches you to help design a study to investigate his theory that sarcoidosis is caused by recent infection with a specific mycobacterium. Describe an appropriate research design, and explain why that design is an appropriate choice to investigate this hypothesis. (30% of marks)
- b) Describe the general features of a confounding variable. (30% of marks)
- c) What techniques may be used to reduce confounding? Explain your answer with examples. (40% of marks)

### KEY POINTS

Most or all of the following would be required for a pass:

- a) Sarcoidosis is a rare condition. A study investigating aetiology would need to be an observational study, and a case control study design would be most suitable.
- b) A confounding variable is a variable, or exposure that is associated both with a disease and with a causative agent that you are studying. A confounder should not be a variable that is 'on the disease pathway' as that would be considered as an "effect modifier". Confounding variables can increase the association between an exposure and an outcome, or decrease the association (i.e. they can be "positive" or "negative" confounders).
- c) Confounding can be reduced by:
- Design: e.g. matching – i.e. if sex is a confounder, every male case is matched with a male control; restriction – again if sex is a confounder, restricting the study to males only; not relevant in the above case [as it is an observational study] – but randomisation should eliminate confounding.
  - Analysis: stratified analysis – e.g. if sex is a confounder, analysing results for males separately to those with females. This is rarely performed now, as stratification reduces your sample size and power. Instead, potential confounders are "adjusted for" using multivariate statistical methods in observational studies.

*The following are additional points which might improve the answer to “good” or “excellent”:*

Directly answering the question set in a succinct manner with no extraneous points. Using appropriate examples (in brief) to support answers where these add to the explanations given.

### **Examiners’ comments**

Excellent answers were produced where candidates were able to sufficiently explain the answers with justification. The good/excellent candidates knew about study design, the rationale behind each study design and the ability to choose based on information presented in a succinct way.

Poor answers were produced where candidates did not know the basic principles or where answers appeared confused. Other candidates wrote everything they know about the subject but did not answer the questions.

In relation to time management in answering the parts of this question - some candidates spent too long on question 2a and so did not have enough time for question 2c, which constituted 40% of the marks. Candidates were left to answering using bullet points.

Common pitfalls in answering the question included the following:

- Confusing the terms and answering generically.
- Not getting to the point regarding study design and “hedging bets”.
- Presenting lots of information on how to undertake a case-control study in Q2a rather than why this study design may be most appropriate.
- Not much detail on regression methods in Q2c.

### **Chair’s comment**

Candidates are advised to look at the marking scheme and allocate time according to the distribution of marks. Candidates are advised to prepare for questions in this section of the paper by developing an understanding of research study hierarchy and epidemiological paradigms.

### **Section of syllabus being tested**

1a research design applications, (biases) and confounding  
6a skills in the design of research studies

## Disease causation, prevention and health promotion

### Question 3

Outline a life course strategy to reduce premature mortality from cardiovascular disease in the population of a named country.

#### KEY POINTS

Most or all of the following would be required for a pass:

• Risk factors for cardiovascular disease: smoking, alcohol misuse, obesity, hypertension, hypercholesterolaemia.

Protective factors for cardiovascular disease: healthy diet, physical activity

Life-course stages: prenatal, preschool, school age, working age, retirement age

Prenatal:

- prevention of low birth weight
- maternal smoking cessation and alcohol harm reduction services;
- healthy maternal nutrition.

Preschool: obesity prevention (breast feeding, healthy weaning, physical activity)

School age:

- obesity prevention (reduce sugar and fat, physical activity guidelines)
- develop healthy dietary habits (reduce salt, '5 a day' fruit and vegetables)
- develop lifetime habit of exercise (community programmes)
- knowledge of harms to health of smoking and alcohol misuse

Working age:

- Lifestyle behaviour change programmes (smoking, alcohol, obesity, diet, physical activity): opportunistic brief advice, structured brief intervention, lifestyle behaviour change services eg smoking cessation, health trainers.
- Population cardiovascular risk assessment programmes and management of hypertension and hypercholesterolaemia
- Work place programmes

Retirement age:

- Obesity prevention (healthy diet and physical activity guidelines)
- Cardiovascular risk assessment and management
- Age appropriate smoking cessation and alcohol harm reduction services

*The following are additional points which might improve the answer to "good" or "excellent":*

Please note these are indicative areas taking a wider public health approach as well as targeting those most in need or at risk.

- Prenatal: Fetal programming
- Preschool: Parenting programmes to promote 'warm, authoritative' parenting with boundaries and rules about food and sedentary activities
- School age: programmes to develop peer group support for healthy lifestyle choices. Whole school policies promoting healthy lifestyles
- Working age: programmes targeted to populations at higher risk of cardiovascular disease eg men in areas of multiple deprivation, specific ethnic minority groups; use of primary care registers to target individuals at higher risk
- Retirement age: Lifestyle opportunistic advice and brief intervention in secondary care settings when patients attend for chronic disease management

### **Examiners' comments**

Well-structured answers tended to score more highly as generally they covered more key points and covered a life course approach. Some answers were very generic and did not apply theoretical concepts to the specifics of cardiovascular disease.

### **Chair's comment**

Candidates are advised when answering similar questions to produce a clear structure for their answer and apply to the specific disease/risk or lifestyle factor required in the question (in this case cardiovascular disease). This will help candidates to cover the breadth of material expected and avoid spending too long on any specific detailed area.

### **Section of syllabus being tested:**

2a Epidemiological paradigms ("life-course") and understanding of 2b Epidemiology of specific diseases (in this case cardiovascular disease)

#### Question 4

Describe and discuss a range of measures to increase uptake of the MMR (measles, mumps and rubella) vaccination in the population of young people age 11-18 years.

#### KEY POINTS

*Most or all of the following would be required for a pass:*

#### **Key messages for the public about the risks to teenagers of Measles, Mumps and Rubella**

Measles and mumps can make teenagers seriously unwell, can interfere with important exams and, in rare cases, can be fatal. People can get measles and mumps at any age if they are not immune. They are not just diseases of early childhood

- Rubella can severely damage the baby if a pregnant women acquires it in early pregnancy
- Geographical areas with low MMR coverage in the 11-18 population are experiencing an increase in the frequency and size of outbreaks of measles and mumps in secondary school age children.

#### **Key messages for the public about the benefit and safety of the MMR vaccine**

Two doses of MMR are necessary to confer full immunity, a single dose of MMR is not enough.

MMR can be given irrespective of a history of measles, mumps or rubella or vaccination.

There are no ill effects from immunising individuals with pre-existing immunity.

About a week after MMR vaccination individuals may experience malaise, fever and/or rash lasting about 2-3 days; more serious adverse reactions are rare.

There is overwhelming evidence that MMR does not cause autism and there is no evidence of an increase in inflammatory bowel disease following MMR.

#### **Methods of communication with the public**

- Use of case stories of teenagers who have been seriously unwell with measles/mumps
- Teenagers: use of social media and text messages; celebrity endorsements of MMR; promotional material in schools and colleges; TV channels / radio stations / magazines with a teenage audience
- Parents: letters from family doctors to parents of teenagers without a record of two doses of MMR; TV channels / radio stations / magazines with a working age audience; include in routine communications between school and parents

#### **Design immunisation service to make access to immunisation easy for 11-18 year olds**

- Use a population register (child health system; GP register) to generate MMR invitations and appointments for those young people age 11-18 without a record of 2 MMR doses
- provide in schools and colleges
- make information understandable for 11-18 year olds
- enable legally competent teenagers to give own consent to immunization

*The following are additional points which might improve the answer to "good" or "excellent":*

Please note these are indicative areas:

- address cultural and/or religious barriers to immunisation
- measures to improve completeness of data on MMR status on population register

### **Examiners' comments**

Good answers used appropriate frameworks to answer the question. Excellent responses included focus on hard to reach groups and described appropriate strategies to raise uptake. There was good awareness of MMR vaccine, perhaps on account of the publicity surrounding it in recent years. Candidates did not mention the issue of incomplete data.

### **Chairs comments**

A brief plan before starting the answer may help candidates ensure they cover all part of the question. This is probably useful for all “describe” and “discuss” type questions.

### **Section of syllabus being tested**

2 g *Predominantly* Health Protection and communicable diseases (immunisation programme) but with elements of 2h (health promotion) and 2i (disease prevention)

## Health Information

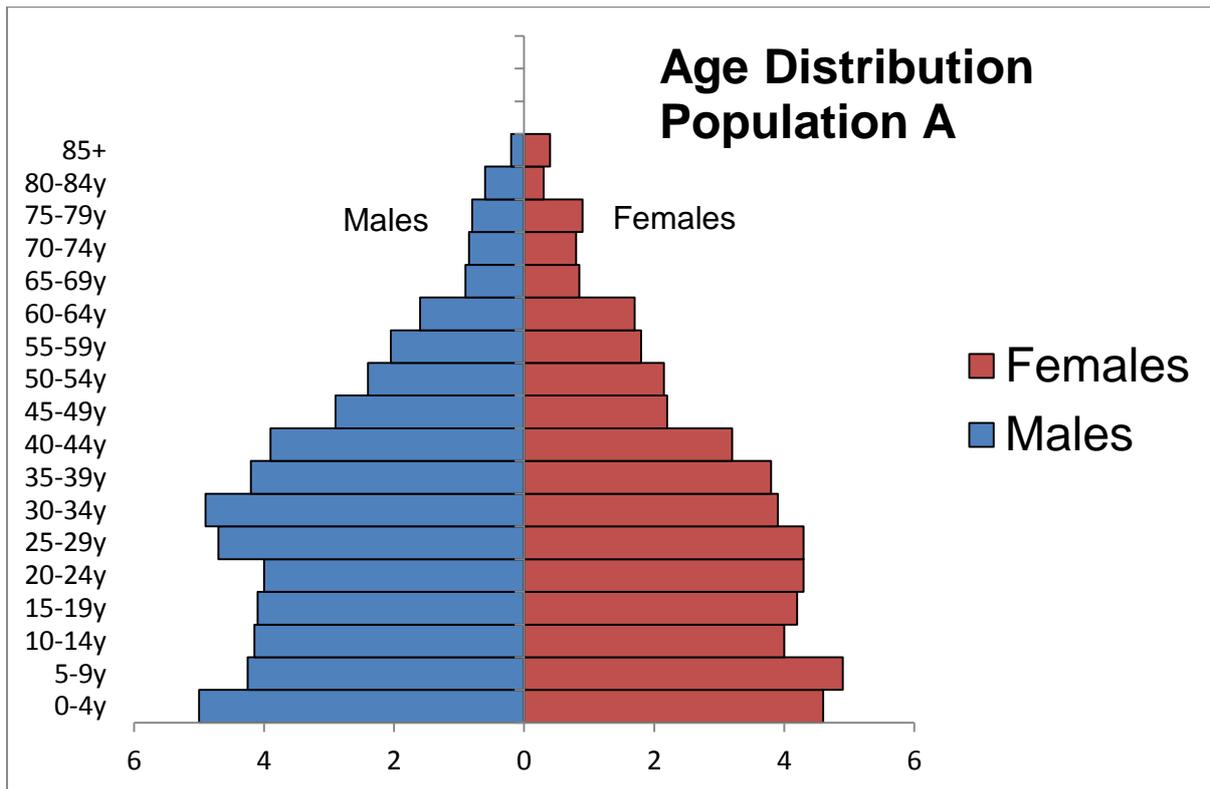
### Question 5 |

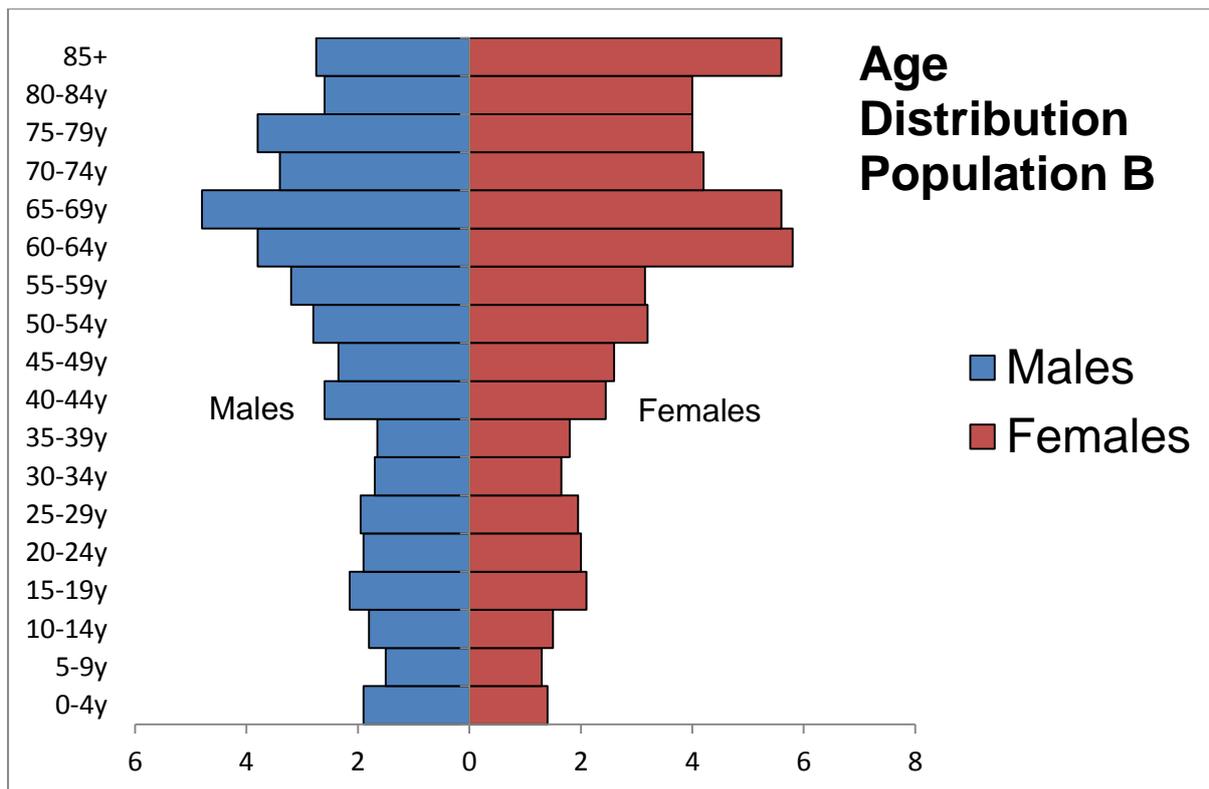
a) Define and interpret **TWO** population fertility measures.

(20% of marks)

b) With reference to fertility, describe the populations below and discuss the public health implications for the populations A and B shown below.

(80% of marks)





### Key Points

*Most or all of the following would be required for a pass:*

- a) Fertility measures: any **TWO** of the following:
  - (1) **Crude birth rate:** number of live births, expressed per 1,000 total population per year in a defined population. It is a poor indicator of fertility because the denominator includes males and females of non-childbearing age.
  - (2) **General fertility rate:** number of live births per 1,000 women between the ages of 15 and 44 years per year. in a defined population
  - (3) **Age-specific fertility rate:** number of births to women of a particular age/age band per year, e.g. age-specific fertility rate for women aged 20-24. in a defined population. It recognises differences in fertility at different age groups.
  - (4) **Total fertility rate:** Average number of live children a woman would bear during her lifetime, assuming her childbearing conforms to her age-specific fertility rate every year of her childbearing years (typically, between ages 15 and 44), in a defined population
  - (5) **Completed fertility rate:** number of children actually born per woman in a cohort of women up to the end of their childbearing years (typically, age 44), in a defined population
  
- b) **Population A** - increased fertility, as reflected in an increase in all measures of fertility  
 Over time leads to considerable increased population size with increasing numbers of children, young people, middle-aged and then elderly people over time

The effects on public health will depend on where in the world the region is, and at which point in the population cycle the region is in. Effects can be on individuals, societies, countries and regions.

**Individuals** – Increased demand for food, clean water, sanitation, and suitable housing. Potential for overcrowding - risk of poverty, epidemics of illness, declining living standards etc.

**Societies** - Increased demand for maternity and child health services; increased demand for food, clean water, sanitation, suitable housing, education; increasing demand for basic health services; later demand for jobs.

### **Population B** - decreased fertility

Measured by - decreasing crude birth rate, general fertility rate, and total period fertility rate. Leads to decreasing numbers of children, young people, middle-aged and then elderly people.

**Individuals** – Puts pressure on working people to support the elderly,

**Societies** – Elderly people have higher dependency levels and greater health and social care needs. As the proportion of working age population declines relative to the elderly there will be fewer informal carers. There will be fewer health and social services workers (unless incentives are given to work in the sector); less income tax revenue to put into services and pensions; more demand for specialist housing; less income to spend on fuel and food. Isolation of the elderly.

*The following are additional points which might improve the answer to “good” or “excellent”:*

There may also be implications for social policy if the trend needs to be countered; for example there may be:

- an increase or decrease in family-centred or family-encouraging policies;
- increase or decrease access to contraception, terminations etc.
- knock on effect on wider policies, e.g. immigration.

Good or excellent answers might also include consideration of global perspectives.

### **Examiners' comments**

Candidates demonstrated some knowledge about fertility rates. Some candidates gave more general answers to the second part of the question, rather than referring to 'fertility' rates. Alternatively candidates focused on just health service implications.

Candidates performed very well on this question by

- providing accurate definitions of appropriate rates which demonstrated an understanding of the components of a rate (numerator/denominator and time component);
- considering the broad range of public health implications of the two population pyramids, e.g. impact on education, social care system, infrastructure etc.

Poorly performing candidates were unable to accurately define measures of fertility or appeared confused in their understanding of basic measures.

Pitfalls in answering this question included: mistakes or confusion in the definition of fertility rates and/or providing an unnecessary and detailed description of the population pyramids.

### **Chair's Comment**

Candidates are advised in preparing for questions in this paper to be familiar with commonly used population measures such as fertility rates and be able to consider and explain related public health implications.

**Section of syllabus being tested:**

Health information - 3a Populations including “effect on population structure of fertility...”

## Question 6

Using specific examples from a named country:

- (a) Describe the advantages and disadvantages of surveys as sources of health information. (60% of marks)
- (b) Discuss which aspects of health are best investigated via surveys rather than using information from routine sources. (40% of marks)

### KEY POINTS

*Most or all of the following would be required for a pass:*

Surveys can allow / enable:

- Access to information concerning health of whole population, not limited to health problems presenting to health care services
- In-depth questioning or examination
- Linkage of items of information
- Standardisation of questions or examination

Possible advantages:

- Various modes of administration (face-to-face, online, etc)
- Can be used for any topic
- Validated instruments exist (e.g. SF-36)
- Can be used to collect qualitative information
- Enables a range of analyses
- Could potentially be semi-automated (e.g. online, or scanned forms)

Possible disadvantages/considerations:

- Potentially expensive to plan and set up
- Need to choose a suitable means for recording, analysis, interpretation and dissemination of results
- Low response rates / need to consider ways to boost up response rates
- Management of data to safeguard confidentiality
- Selection (and other) bias
- Can be difficult to achieve validity and reliability of questions
- Generalizability may be an issue

Aspects of health best suited to investigation via surveys (which may not be captured by other methods or routine data sources):

- Determination of risk factors
- Detection of milder forms of disease
- Measurement for broader health measures, e.g. health related quality of life
- Monitoring trends or progress towards achieving improvements or targets
- Measuring patient or user satisfaction
- Estimation of disease prevalence

*The following are additional points which might improve the answer to “good” or “excellent”:*

Examples which demonstrate the candidate has a good understanding of both the **practicalities** of using health surveys as a key tool for improvement of the public health issues and which used appropriate examples to illustrate the advantages, disadvantages and uses of surveys.

### **Examiners' comments**

The first part of the question focused on methodological issues, with the second part focusing on application. However, some candidates covered the same area in both, particularly confusing the advantages of surveys as a source of health information with the topics best investigated using this method. In general candidates were better at describing the methodological problems and disadvantages rather than their advantages.

Candidates who performed well were able to list areas suitable for health surveys, with the best candidates illustrating this with examples drawn from their named example country.

Candidates mixed up advantages as a method with examples of subjects best suited to survey method. Candidates had a tendency to simply list suitable subjects, rather than discuss as specified in the question.

Some candidates focused their answers discussing and analysing the specifics of well-known examples of surveys. This could result in answers not demonstrating applied and broader understanding of survey methods.

### **Chair's comments**

In preparing for questions from this part of the syllabus, candidates should be familiar with information sources and be able to describe rationale for use and practical examples.

### **Section of the syllabus tested:**

Health Information 3c Applications

**Medical sociology, social policy and health economics**

**Question 7**

- (a) Define marginal analysis (25% of marks)
- (b) Using a defined example in a named country of your choice, explain how the technique of marginal analysis can be applied to a public health service or a hospital service. (25% of marks)
- (c) Define supply and demand analysis (25% of marks)
- (d) Using a defined example in a named country of your choice, explain how the techniques of supply and demand analysis can be applied to a public health service or a hospital service. (25% of marks)

**KEY POINTS**

*Most or all of the following would be required for a pass:*

*Marginal analysis.*  
Marginal analysis underlies all optimization problems.  
Marginal benefits and marginal costs  
Optimization techniques specify the appropriate criteria used to analyse scarce resources to minimize the cost of producing an output or maximizing the output subject to resource constraints.

*Supply and demand analysis.*  
Supply and demand analysis allows an understanding of the reasons for the increase in prices and expenditures.  
An increase in demand without an increase in supply will normally result in an increase in price; an increase in supply without an increase in demand will normally result in a reduction in price etc.  
It can estimate consequences in price, quantity of service, and total expenditure of redistributive policies to increase medical services in the population  
Supply and demand analysis permits the prediction of a new equilibrium between prices and quantities as they change.

Problems of scarcity and choice are the basis for the economists' two basic tools used to analyse issues of efficiency and redistribution. Optimisation techniques, based on marginal analysis and supply and demand analysis are used for predicting new equilibrium situations.

*Examples: Application to public health:*

- government agencies (NHS, public health departments, local governments) can use marginal analysis to determine the most efficient allocation of medical and non-medical inputs (considering each programme's marginal benefits and marginal costs) to achieve an increase in health status of a defined population.

- predict the effect of redistributive policies
- predict the effect of a change in demand for a service due to, for example, ageing of the population
- enables a determination to be made for which combination of institutional settings is less costly for treating particular types of patients.

*Application to hospitals:*

- determine which set of health manpower, such as nursing staff or health assistants, etc., given their relative productivity and wages, are least costly (quality held constant) for producing patient care on a nursing unit.
- forecast hospital prices and expenditures based on changes in demand for hospital care or the increased cost of providing care.

Reference to relevant evidence in the literature

*The following are additional points which might improve the answer to “good” or “excellent”:*

Key points clear structured answers with clear definitions and relevant well thought through detailed examples of applications. There should be no extraneous information (ie avoiding a scattergun approach in the hope of attaining marks).

**Examiners’ comments**

Candidates had an understanding of marginal analysis and supply and demand. They were all able to provide examples but some examples did not sufficiently illustrate their understanding and were quite general.

Those who performed well had a clear structure and were able to provide detailed examples to illustrate their points. Those who did well also explained clearly the economic terms.

Potential pitfalls in answering this question included the following:

A lack of structure, - general or superficial answers, providing insufficient definitions of the terms. Not explaining that marginal analysis is about optimisation techniques that consider an extra additional unit. Not linking supply and demand to price.

**Chair’s comments**

Candidates are advised when preparing for health economics questions to have a thorough understanding of terms which they should be able to define clearly and succinctly.

Candidates are often asked to illustrate their answers with practical examples. While it is acknowledged candidates may not have carried out health economic studies in practice, an understanding of how knowledge and concepts can or might be applied practically demonstrates understanding and is expected of candidates.

**Section of the syllabus tested:**

4d Health economics – principles of health economics including supply and demand, techniques of economic appraisal including marginal analysis.

## Question 8

Describe the effects of unemployment on ill health

(50% of marks)

**and**

Outline possible social explanations for the relationship between unemployment and health

(50% of marks)

### Key Points

*Most or all of the following would be required for a pass:*

Description: A definitional statement about the impact of unemployment on ill health – should include most of the following -

- The 'unemployed' do not form a single category. Ill health affects subdivisions differently,
- Higher mortality,
- Higher prevalence of self-rated ill health,
- High suicide and parasuicide rates,
- Higher psychological morbidity,
- Increased use of health services,
- Poverty – financial anxiety, deteriorating diet,
- Stress – non financial benefits of work; unemployment as a form of bereavement, with loss of structure, and self esteem.
- Health behaviours – these are more damaging in unemployed people (poor diet, alcohol, cigarettes, excess or lower body weight),
- Unemployment increases the chance of other adverse events e.g. home and marriage breakdown
- Job insecurity - Health may be affected when people anticipate unemployment but are still at work.

Social explanations for the relationship between unemployment and health - should some consideration of the following:

- Health selection – ill health is a risk for job loss and for subsequent chances of re-employment
- Stigma
- Social disadvantage
- Social networks – lack of, or change to
- Self efficacy (lack of)/ loss of locus of control
- Additional/confounding impact of age, gender, ethnicity, culture
- No single cause – a complex relationship

Reference to relevant evidence in the literature

Provision of an integrated example, eg. in their public health practice or local area

*The following are additional points which might improve the answer to “good” or “excellent”:*

An excellent answer will correctly and appropriately identify relevant social theory to explain the effects of unemployment on ill health, eg. stigma, power, psychological theories of behaviour.

### **Examiners' comments**

Candidates had an understanding of unemployment and the effects on ill health but were less able to provide specific examples. A minority of candidates were able to identify social theories as part of their answer.

Those who performed well had a clear structure and were able to provide detailed consideration of relevant theories to illustrate their points. Those who did well also explained clearly what they meant by the term unemployment.

Potential pitfalls in answering this question included the following:

- a lack of structure, with very general and superficial answers.
- Failure to acknowledge the complexity of the relationship between unemployment and health or that “the unemployed” were not a homogeneous group.
- Repeating the information in part (a) in part (b) rather than using theories to explain the possible reasons.

### **Chair's comments**

It is acknowledged that wording in the question could have been more consistent in each part (ie ill health or health in both parts). However the key principles and key points remain. Examiners' did not comment on any ambiguity in interpretation of the question. For the sociology section, candidates should be familiar with key sociological theories and be able to apply to public health lifestyle or risk factors.

### **Section of the syllabus being tested:**

Medical Sociology, 4a concepts of health, wellbeing, illness and aetiology of illness..  
“explanations for various social patterns and experiences of illness including....employment status”.

## Management and organisation of healthcare

### Question 9

- (a) Identify and outline three approaches that could be used to assess whether levels of healthcare spending by an organisation need to be changed. (30% of marks)
- (b) Choose one of these approaches that could be used to improve outcomes and explain it in detail, including its strengths and weaknesses. (70% of marks)

### Key Points

*Most or all of the following would be required for a pass:*

- 1 Methods
  - Benchmarking
  - Historic comparison
  - Comparing spend with outcomes
  - Programme Budgeting
  - Comparing spend across different populations
  - Activity based costing
  - Resource consumption accounting
  - Throughput accounting
- 2 Detailed explanation
  - Describe an approach that compares spend with outcome
  - Use it to compare between programmes of care rather than services
  - Learn from efficiencies e.g. low spend, high outcome
  - Probe inefficiencies e.g. high spend, low outcome
  - Use measures to influence strategy of healthcare organization
  - Strengths & opportunities: systematic, allows comparison (historic or across organisations), looks at cost effectiveness, outcome driven

*The following are additional points which might improve the answer to "good" or "excellent":*

- Able to describe the limitations of the approach chosen ( e.g. Delay in observable outcome effects for health promotion programs; incomplete cost estimation and difficulties in collecting relevant or comparable data
- able to describe the application of the approach(es) in context (for example from a government department perspective versus the perspective of a direct service providers).

### Examiners' comments

Candidates who demonstrated their knowledge were able to take into consideration financial methods as outlined in the key point above and apply one approach to health care planning. However candidates who performed poorly failed to demonstrate that they understood the topic. Some did not mention anything related to spending/ budgeting and the consideration of financial resources when assessing the need to change/ ways to improve outcomes.

**Chair's comments**

Candidates are advised when preparing for this section of the paper to look closely at the syllabus to consider financial management as well as more general management theories. For Section A, breadth (3 examples) rather than depth were required.

**Section of the syllabus being tested:**

Organisation and management of healthcare and health care programmes. 5f Finance (including "methods for audit of health care spending")

## Question 10

(a) Describe the circumstances in which conflict can occur within a project team  
(40% of marks)

(b) Outline the techniques that can be used to resolve this conflict  
(60% of marks)

### KEY POINTS

*Most or all of the following would be required for a pass:*

A project team typically consists of a variety of members with different knowledge, skills and positions; mutually respecting heterogeneity is preferable to competitive homogeneity. The circumstances of conflict should be classified. An example is the Karen Jehn's typology of conflict:

- (1) Task-content conflict – refers to disagreements about the actual task being performed by members.
- (2) Emotional conflict – which involves negative emotions and dislike of the other people involved in the conflict.
- (3) Administrative conflict – refers to disagreements regarding the manner in which a goal should be reached.

Conflict in a team can occur at different levels:

1. Intrapersonal - the internal, mental struggle to select alternatives
2. Interpersonal - differences between individuals
3. Intragroup - differences between members of a group pursuing a similar goal
4. Intergroup - differences between groups with competing goals

Conflict management techniques:

Based on the Dual Concern Model by Kenneth Thomas, the conflict management techniques reflect a concern for both an individual's own and the opponent's outcome. Four techniques are described:

- accommodation
- pressing
- avoiding
- negotiation (incorporating compromise and collaboration).

The principles in negotiation can be applied in project team management:

- (1) Separate the people from the problem.
  - Discussion should focus on issues, not personalities.
- (2) Focus on interests, not positions.
  - Behind opposed positions often lie compatible interests.
- (3) Invent options
  - Decision should aim at collaborations for the best possible solution for the team
- (4) Use objective criteria.
  - Consensus building process should focus on current, factual information, with a sense of fairness and equity.

*The following are additional points which might improve the answer to 'good' or 'excellent':*

Addressing that conflict can have both positive and negative effects on the team

- Conflict between personalities can have negative effects, while disagreements over task content may enhance team development.

- A lack of conflict can cause groupthink (phenomenon in which team members strive towards consensus at the expense of the right decision).  
A conflict can be addressed not only as a short-term problem, but an opportunity for the team to learn how future changes can be handled more effectively in the long term.

Additional key points about team dynamics:

Team Formation – The Model of Group Development by Bruce Tuckman

- forming
- storming
- norming
- performing
- followed by adjourning and transforming, possibly

Roles within the Team as defined by Belbin:

- plant
- shaper
- team worker
- implementer
- completer finisher
- resource investigator
- monitor/evaluator

### **Examiners' comments**

Candidates who performed well answered the question systematically and included most salient points.

Candidates who answered this question poorly did not demonstrate understanding of the basic concepts and/or answered in a non-structured way.

Potential pitfalls in answering this question were failure to include different models on conflict management and not including reference to group dynamics at different levels.

### **Chair's comments**

In preparing for questions in this part of the paper, candidates are advised to try to understand the topic from a broader perspective and in this case -where the question asks for techniques -not just confine an answer to one or two solutions. (However, some management questions in this paper do ask for application of a single named theory)

### **Section of the syllabus being tested:**

5a including theoretical and practical aspects of power and authority, role and conflict

## Paper IIA

You are the public health specialist involved in a collaborative project between your local hospital and a hospital in a low income country. This paper was brought to your attention at a World Health organisation (WHO) meeting.

**A surgical safety checklist to reduce morbidity and mortality in a global population.**  
**AB Haynes *et al.* N Engl J Med 2009;360:491-9.**

**This paper has been shortened by removing the abstract.**

Q1. Critically appraise the paper

(40% of marks)

Q2. The authors used several sites and then standardised the outcome measures to compare frequencies. Define the type of standardisation methodology used and its advantages and limitations with reference to the above paper.

(10% of marks)

Q3. Having read the paper, write a letter to the Medical Director at the hospital in the low income country about the content of the paper and whether a similar checklist would be suitable for use in their hospital.

(30% of marks)

Q4. It has been agreed to go ahead and introduce a surgical safety checklist at the low income country hospital. Briefly outline the practical factors to consider and what special considerations might be needed to implement. You are planning a meeting to take this forward. Who would you involve?

(20% of marks)

### Q1 Critical appraisal

**Was there a clearly focused question?** – *Looked at whether a program to implement a 19-item surgical safety checklist designed to improve team communication and consistency of care would reduce complications and deaths associated with surgery.*

**Important public health problem?** – *Surgical care associated with considerable risk of complications and death, at least half of which is avoidable, therefore surgical care and its complications represents a substantial burden of disease.*

**Was the type of study appropriate?** - *Yes, non-randomised intervention study (introduction of surgical safety checklist) involving a comparison of pre-intervention data with post-intervention data following the consecutive recruitment of two groups of patients from the same operating rooms at the same hospitals.*

**Were sources of information used appropriate?** – *Yes, checklist used in each study hospital developed from WHO guidelines. Local data collector trained by same primary investigators on all investigation sites and used standardised data sheets. Surgical complications defined as in the American College of Surgeons' National Surgical Quality Improvement Program. Assessed adherence to a subgroup of six safety measures as an indicator of process adherence.*

**Was the analysis appropriate?** – Used standardised rates of various end points to reflect the proportion of patients from each site. Standardised rates used to compute frequencies of performance of specified safety measures, major complications, and death at each site before and after implementation of checklist. Additional analyses done to test effect of presence or otherwise of data collector in theatre and of case mix on results. Use of regression analysis therefore entirely appropriate. Sites disaggregated to test effects of different sites on results.

**Presentation of results** – range of results presented in clear tables.

**Results** - The rate of death was 1.5% before the checklist was introduced and declined to 0.8% afterward ( $P = 0.003$ ). Inpatient complications occurred in 11.0% of patients at baseline and in 7.0% after introduction of the checklist ( $P < 0.001$ ). Results significant at both high income and low income sites except for mortality rates at high income sites.

**Validity of findings** - Problems might arise from confounding due to secular trends. This was examined and thought unlikely. Data collection restricted to inpatient complications and effects on outpatient complications not known. Would bias results in an underestimation of effect.

**Generalizability** – Likely to apply in most settings but two checklist safety features might require commitment of additional resources although these features (pulse oximetry and prophylactic antibiotics) were present in all study low income sites.

**PH significance** - Surgical complications are a considerable cause of death and disability worldwide. Applied on a global basis, this checklist program has the potential to prevent large numbers of deaths and disabling complications.

Q2. The authors used several sites and then standardised the outcome measures to compare frequencies. Define the type of standardisation methodology used and the advantages and limitations.

*Candidates should identify the direct method from the text and the fact that it's a rate rather than a ratio.*

*Advantages are that this form of standardisation allows for comparison and as stated in the text "minimises the effect of differences in the number of patients at each site".*

*Limitation – comment on the relevance/appropriateness of the "standard" population used. Standardised for number of patients but not age and gender although these variables were measured.*

Q3. Write a letter to the Medical Director at the low income country hospital. 30% of marks

*Use of appropriate language for professional to professional correspondence. Give reference details and brief summary of findings highlighting the key points of the paper (not just re-doing the critical appraisal).*

*Key points from paper should include:*

- Checklist saves lives / reduce post-op complications
- Tested in range of settings
- Costs – low
- Draw attention to WHO involvement and support for implementation.
- Explore possibilities / what is already in place?
- Invite response.

Q4. It has been agreed to go ahead. What would be the practical factors to consider and what special considerations might be needed in this situation? You are planning a meeting to

take this forward. Who would you involve?  
20% of marks

*Presentation of a summary of the paper*

Policy briefing / options – adaptation of the checklist to local need

Practical involvement / considerations - Understanding how surgical specialties work; need to ensure senior champions of the system from relevant disciplines.

Costs – may be additional costs from pulse oximetry and prophylactic antibiotics, are these available?

Influencing skills. Development vs. Developing – use of initial training team from ‘developed’ setting to increase capacity. Formation of a local core team to facilitate implementation.

Practical Data Collection - data collection (including baseline) to detect change in outcomes

Who to involve.

- surgical team
- anaesthetic rep
- theatre manager
- lead theatre nurses
- Medical Director / Clinical Leader
- Pharmacy rep

**Examiners’ comments**

Examiners considered this a straightforward paper to appraise. Candidates potentially waste time discussing how they felt the investigation should have been carried out rather than drawing attention to the key points made by the authors. Focusing away from the actual content of the paper (e.g. on epidemiological methods in general or ethics committee approval) attracts few if any marks. Candidates lost marks on question two by failing to understand the question on the standardisation methodology used and not being able to state the limitations that it was standardised for number of patients but not age and gender, although these variables were measured.

In question 3, the letter to the low income country hospital medical director was often of a patronising nature. Candidates repeated areas of the critical appraisal rather than flagging up relevant key points. Candidates advised the medical director that they should implement the surgical safety checklist but failed to ask what was already in place at the hospital.

In question 4 few candidates stated that they would present a summary of the paper’s findings to a meeting convened to consider the introduction of a safe surgery checklist, or discussed available options. Many discussed in terms of generic project management terminology which suggested a lack of experience at a practical level.

There was evidence of poor time management by many candidates. Candidates who performed well produce a critical appraisal covering a majority of key points. Those producing more concise responses to question 1 (critical appraisal) produced the better answers to questions 3 and 4, presumably because they had more time to consider their responses.

Many candidates mentioned the need to carry out an evaluation of the effect of introducing a safe surgery checklist in question 4.

### **Chair's comments**

Candidates can prepare for IIA by spending as much time as possible involving themselves in the work of whichever department they are attached to in order to gain the practical experience to answer IIA questions following the critical appraisal. However, as the paper is set for those in public health from a variety of contexts, in preparing for the task part of the paper, candidates should concentrate on key principles which could be applied in perhaps a different setting from their own practice (e.g international as in this question). It should also be noted that questions for Papers I and IIA are set up to eighteen months in advance and therefore are very unlikely to be bound in any particular public health organisational configuration, which is subject to change. The task should draw on and apply, rather than repeat large chunks of, the critical appraisal. The technical question can be answered from the text and information provided in the article.

### **Section of the syllabus tested:**

6a, 6b,6c

## **Paper IIB**

Questions from Paper IIB are not publicly available, although specimen questions are available on FPH website.

### **Examiners' comments**

As in previous sittings, while many candidates gave reasonable answers to data interpretation questions, a number struggled with carrying out simple calculations and describing key concepts. Candidates need to ensure that they have read the syllabus for Part A and are able to conduct calculations appropriately.

A number of candidates failed to address the questions asked. It is very important to refer back to the question asked and provide a focused answer rather than writing all that is known on a topic which attracts no marks. For example if a question asked the candidate to use the data provided then this is what was required and not a general answer on the topic in question. The marks allocated to each part of question are indicative of length of answer needed. If there is a section of a question that is taking more time than expected, perhaps good use of time may be to leave this, move on to the next question and come back to it later in the exam. This will make the most of the available time and maximise potential to gain marks. Always show working out for calculations and include formulae/definitions used.

### **Chair's comment**

Sample questions are available on the FPH website. There are no plans to expand this pool of questions.